

What is claimed is:

- 1 1. A method of delivering solute to a target location, the
2 method comprising the steps of:
3 providing a crosslinked thermosensitive cellulose
4 ether gel structure, wherein said gel structure is
5 loaded with a solute; and
6 positioning said loaded gel structure to said
7 target location.
- 1 2. The method of claim 1, further comprising the step of
2 increasing the temperature of said loaded gel structure
3 from an initial temperature to a temperature at or
4 above the transition temperature of said gel.
- 1 3. The method of claim 2, wherein said step of increasing
2 the temperature of said loaded gel structure results in
3 the deswelling of said gel and the release of said
4 solute from said gel.
- 1 4. The method of claim 2, wherein said step of increasing
2 the temperature of said loaded gel structure includes
3 the step of exposing said loaded gel structure to a
4 liquid having a temperature greater than said initial
5 temperature of said loaded gel structure.

1 5. The method of claim 2, further including the step of
2 coating said gel onto a substrate before said step of
3 positioning said loaded gel structure to said target
4 location.

1 6. The method of claim 5, wherein said substrate comprises
2 a polymer material.

1 7. The method of claim 6, further comprising the steps of:

2
3 providing functional groups on said polymer
4 material before said step of coating said gel onto said
5 substrate; and

6 adding a crosslinking material to said cellulose
7 ether gel, said crosslinking material for reacting with
8 said functional groups and thereby attaching said
9 cellulose ether gel to said substrate.

1 8. The method of claim 7, wherein:

2 said polymer material is polyethylene
3 terephthalate;

4 said functional groups comprise amine groups; and
5 said linking material comprises divinylsulfone.

1 9. The method of claim 8, further comprising the step of
2 exposing said polyethylene terephthalate to
3 ethylenediamine to form said amine groups.

1 10. The method of claim 5, wherein:
2 said target location is located within a mammalian
3 body;
4 said substrate is a medical device;
5 said solute is a biologically active solute; and
6 said step of increasing the temperature of said
7 loaded gel structure is accomplished by exposing said
8 loaded gel structure to an external liquid having a
9 temperature greater than said initial temperature of
10 said loaded gel structure.

1 11. The method of claim 5, wherein:
2 said target location is located within a mammalian
3 body;
4 said substrate is a medical device;
5 said solute is a biologically active solute; and
6 said step of increasing the temperature of said
7 loaded gel structure is accomplished by exposing said
8 loaded gel structure to body temperature.

1 12. The method of claim 1, wherein said solute is loaded
2 into said gel structure by forming a solution of said
3 solute and placing said gel into said solution.

1 13. The method of claim 1, wherein said gel is formed in
2 the presence of said solute.

1 14. The method of claim 1, further including the step of
2 coating said gel onto a substrate before said step of
3 positioning said loaded gel structure to said target
4 location.

1 15. The method of claim 14, wherein said substrate
2 comprises a polymer material.

1 16. The method of claim 2, wherein said step of increasing
2 the temperature is accomplished with the use of
3 resistance heating.

1 17. The method of claim 2, wherein said step of increasing
2 the temperature is accomplished with the use of
3 induction heating.